

**Bat Survey of the Kootenai National Forest,
Montana: 1994**

A Report to:

USDA Forest Service

Kootenai National Forest
506 U.S. Highway 2 West
Libby, Montana 59923

Submitted by

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ABSTRACT

Five species of vespertilionid bat were identified during field surveys on the Kootenai National Forest in July, August, and September 1994. Many of the 54 sites surveyed were within 200 m of water (rivers, streams, beaver ponds, marshes), but less than 30% of the sites were actually abutting wetland habitat. Most sites surveyed were in stands of mixed conifers.

Species identified were *Myotis evotis*, *Lasionycteris noctivagans*, *Eptesicus fuscus*, *Lasiurus cinereus*, and *Plecotus townsendii*. Most *Myotis* species cannot be distinguished from one another with bat detectors, the survey tool used in 1994. Unidentified *Myotis* were detected at 26 sites; as many as six species (*M. yumanensis*, *M. thysanodes*, *M. lucifugus*, *M. volans*, *M. californicus*, and *M. ciliolabrum*) may have been present and included in this grouping. Field surveys with mist nets in 1993 revealed the presence of the last four *Myotis* species on the Kootenai National Forest, as well as *M. evotis* and *Lasionycteris noctivagans*.

Myotis sp. and *Eptesicus fuscus* were detected on all six Districts of the Kootenai National Forest in 1994. The other four species were detected on at least three of the six Districts. The Three Rivers District was the only unit where all five identified species of bats were detected, but at least three species were identified on all Districts.

Combined results from the 1993 and 1994 surveys showed the presence of nine species of vespertilionid bat on the Kootenai National Forest. Four species (*M. evotis*, *M. lucifugus*, *Lasionycteris noctivagans*, *Eptesicus fuscus*) have been detected on all Forest Districts.

Currently, little is known about the reproductive activities of bats on the Kootenai National Forest, but ten species (*M. yumanensis*, *M. lucifugus*, *M. evotis*, *M. volans*, *M. californicus*, *M. ciliolabrum*, *Lasionycteris noctivagans*, *Eptesicus fuscus*, *Lasiurus borealis*, and *Plecotus townsendii*) may breed on Forest Service land. Overwinter occurrence and distribution of bats on the Kootenai National Forest remain virtually unknown.

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INTRODUCTION

As demand for resources and recreation increase on public lands, so does the need for wise land management decisions. How disturbance is likely to affect animal and plant populations forms the basis for management plans, which must begin with an inventory of species present. Bats are one of several groups which must be considered. Six species of vespertilionid bats (*Myotis evotis*, *M. yumanensis*, *M. ciliolabrum*, *M. volans*, *M. thysanodes*, and *Plecotus townsendii*) found in northwestern Montana are on the U. S. Fish and Wildlife Service list of candidate (C2) species for threatened or endangered status pending further study; *P. townsendii* is also listed by the U. S. Forest Service as Sensitive.

Knowledge about the distribution, habitat requirements, and movements of bats in western North America is fragmentary. Study efforts on bat populations have generally been concentrated in areas with a relative abundance of caves and mines. Yet, much remains to be learned about basic distribution, seasonality of occurrence, habitat use, and population status of most species, especially in areas of extensive forest cover.

In the summer of 1994, a survey of bats occurring on the Kootenai National Forest in Flathead, Lincoln, and Sanders counties, Montana was conducted, expanding on preliminary efforts initiated in 1993 (Roemer 1994), to determine species presence and distribution on the different forest Districts. The results of this survey, along with data published previously, are presented here and should form the basis for further inventory and monitoring efforts.

METHODS

Historical records of bats from northwestern Montana and adjacent areas of Idaho and Canada were obtained from the literature (see Bibliography). These records provide data on breeding status, habitat use, seasonality of occurrence, and distribution. Museum records, other than those previously published, are not included here.

Field work in 1994 was conducted from late July to mid-September. An attempt was made to visit the six Districts of the Kootenai National Forest (Cabinet, Fisher River, Fortine, Libby, Rexford, and Three Rivers). Survey sites were chosen based on accessibility and the presence of water nearby, as bats tend to concentrate their foraging activity over water sources where insects are abundant (all bats in this region are insectivorous). However, forest clearings or narrow corridors within forest stands were also monitored. Habitat data were collected for each site (see field form in Appendix 1), and an attempt was made to sample different cover types. Samples from different habitats are too few for statistical analyses, however, and are not presented here. No potential roost sites (caves, mines, cavities in trees) were visited or checked, despite the presence of several in the region.

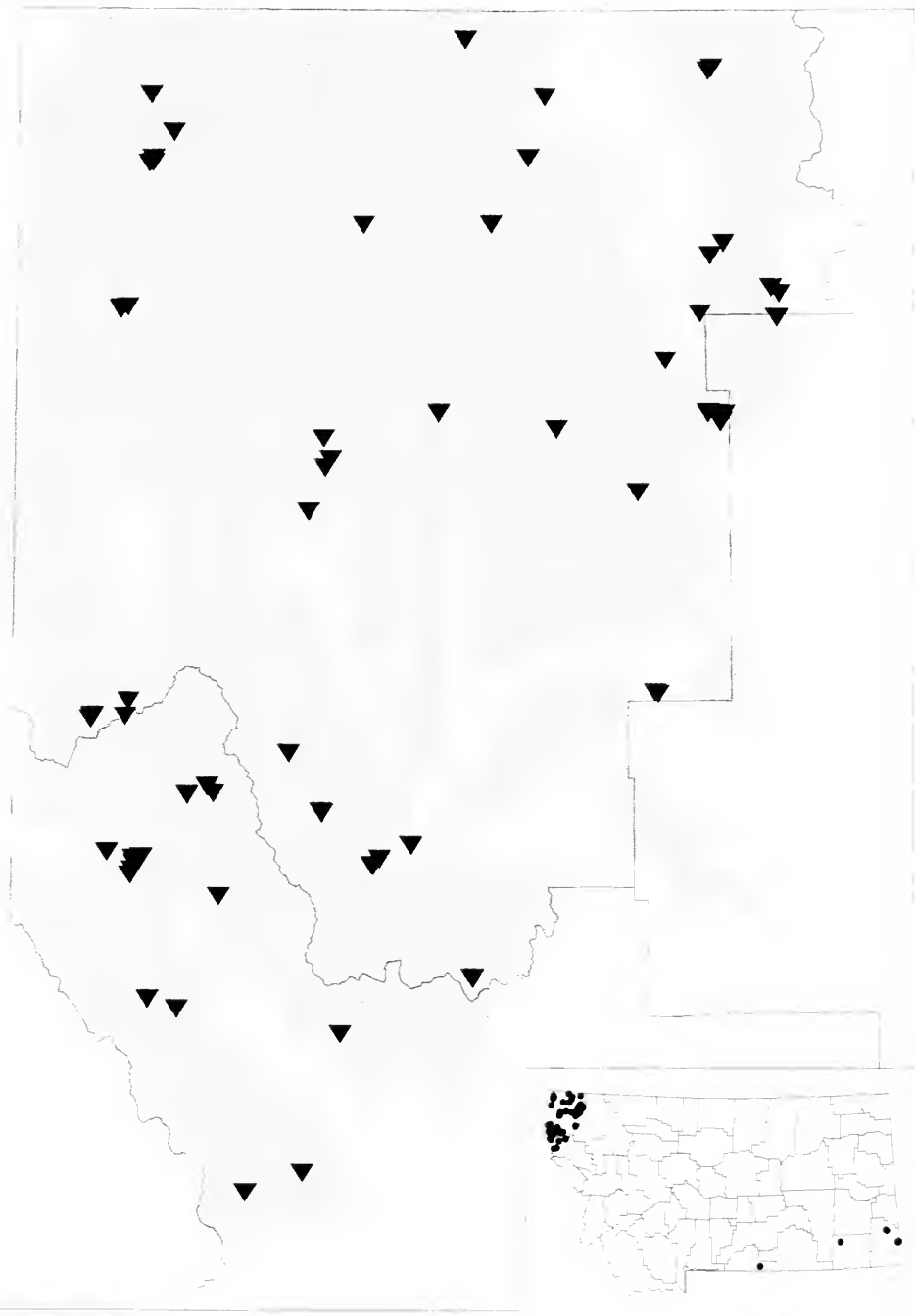
Ultrasound bat detectors were used during the 1994 bat survey on the Kootenai National Forest. Thomas and West (1989) provide a general discussion of sampling methods for bats. Each method has strengths and weaknesses for survey work, with no single method being definitive. Mist-netting, another commonly employed technique used in 1993 (Roemer 1994), has the advantage of allowing in-hand identification of individuals and collection of data on sex and reproductive condition, neither of which are obtainable with bat detectors. Some bats may escape capture in nets, however, and some species present at a particular site may go undetected. Detectors can determine the presence of species that may be missed during mist-netting, but they are not without drawbacks. Call duration, time between calls, call structure, and call frequency can vary significantly with habitat and between individuals (Erickson 1993), often making species identification difficult. On the Kootenai National Forest, *Myotis evotis* was the only species of *Myotis* which could be accurately distinguished from other members of the genus using a bat detector. Ideally, a combination of mist-nets and bat detectors would be employed at a given site in order to obtain the most accurate picture of distribution; mist-netting is time-consuming, however, and therefore permits fewer sites to be surveyed within the allotted time period.

Microchiropteran bats use a variety of ultrasonic vocalizations as echolocation aids for navigation and prey capture. Fortunately, a number of studies have determined that the signals emitted by many species of bats can be used to distinguish among species (e.g., Barclay 1986, Fenton and Bell 1981, Fenton *et al.* 1983, MacDonald *et al.* 1994). This characteristic permits the assessment of species-presence during inventory work through use of portable ultrasound bat detectors. ANABAT II bat detectors (Titley Electronics, Ballina, Australia) were used during the 1994 field season. These detectors are sensitive to broadband ultrasonic calls common in bat vocalizations (usually 20-180 kHz). Ultrasonic signals in the range of bat vocalizations are captured, converted to an audible frequency (up to 10 kHz), and recorded on magnetic tape. Detector units (consisting of the detector, timer/tape-driver, and a voice-activated cassette tape recorder) were set up before dusk near bodies of water and forest openings (where bat activity

would be expected) and left in place overnight; usually one cassette tape was sufficient to record activity at a single site. Detectors were sensitive to bats within a minimum range of 20 m. Recorded tapes were returned to the laboratory and analyzed on an IBM compatible PC using an ANABAT II ZCA Interface Module and software. Assignment of vocalizations to a particular species of bat was achieved by matching field recordings with a reference set of calls obtained from captured individuals, in addition to matching call characteristics with those reported in current literature.

Bat Survey Locations

On or near the Kootenai National Forest, Montana



RESULTS AND DISCUSSION

A total of 54 sites were checked for nocturnal bat activity in 1994: four sites in July, 18 in August, and 32 in September. Only three sites on the Fisher River District, and one on the Rexford District, were surveyed. The remaining four Districts were surveyed at a minimum of 12 sites each (Appendix 2). All sites were sampled with ANABAT II ultrasonic bat detectors. Bats were detected at 40 (74%) of the sites; a mean of 3.1 ± 1.3 species were detected at sites where bats were present. The maximum number of bat species at a single site (5) was detected in the Cabinet (2 sites), Fortine (1 site), Libby (1 site), and Three Rivers Districts (1 site); four of the five sites were immediately adjacent to water (the fifth site was in a mixed-conifer stand with some overstory removal).

Five species of vespertilionid bat (common names usually follow Jones *et al.* 1986) were identified during 1994 field surveys (see Appendix 3): Long-eared Myotis (*Myotis evotis* - 16 sites), Silver-haired Bat (*Lasionycteris noctivagans* - 17 sites), Big Brown Bat (*Eptesicus fuscus* - 16 sites), Hoary Bat (*Lasiurus cinereus* - 8 sites), Townsend's Big-eared Bat (*Plecotus townsendii* - 17 sites). In addition, *Myotis* sp. was detected at 26 sites.

Field surveys in 1993 (Roemer 1994) identified six bat species on the Kootenai National Forest (*M. californicus*, *M. ciliolabrum*, *M. evotis*, *M. lucifugus*, *M. volans*, *Lasionycteris noctivagans*), bringing to nine the number of species identified on the Forest during the two years (see Appendix 4). Of the species detected by Roemer (1994) but missed in the 1994 field survey, all were species of *Myotis* (all but *M. evotis*) and were probably overlooked due to the difficulty of using vocalizations as the sole means of identification.

The 1994 field survey (see Appendix 4) detected the presence of at least four bat species from the Cabinet District, three species from the Fisher River District, four species from the Fortine District, four species from the Libby District, three species from the Rexford District, and five species from the Three Rivers District. Species richness values for each District, using the combined 1993-1994 results, are 8, 6, 6, 7, 8, and 7 species, respectively. No District included all species (9) known to occur on Kootenai National Forest lands, but four species (*M. evotis*, *M. lucifugus*, *Lasionycteris noctivagans*, and *Eptesicus fuscus*) were found in all six Districts of the Kootenai National Forest. All other species were detected on at least three of the six Districts.

Ten species (*Myotis yumanensis*, *M. evotis*, *M. lucifugus*, *M. californicus*, *M. ciliolabrum*, *M. volans*, *Lasionycteris noctivagans*, *Eptesicus fuscus*, *Lasiurus cinereus*, and *Plecotus townsendii*) are likely to breed on the Kootenai National Forest. Each species is known to breed in Canada to the north, or in western Montana to the east and south (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969, van Zyll de Jong 1985); all but *M. yumanensis* were identified in mid- to late-summer during the 1993 and 1994 surveys (see above). Lactating females of *M. californicus*, *M. ciliolabrum*, *M. evotis*, and *M. volans* were captured on the Kootenai National Forest during summer in 1993 (Roemer 1994). Which species overwinter on the Kootenai National Forest is unknown.

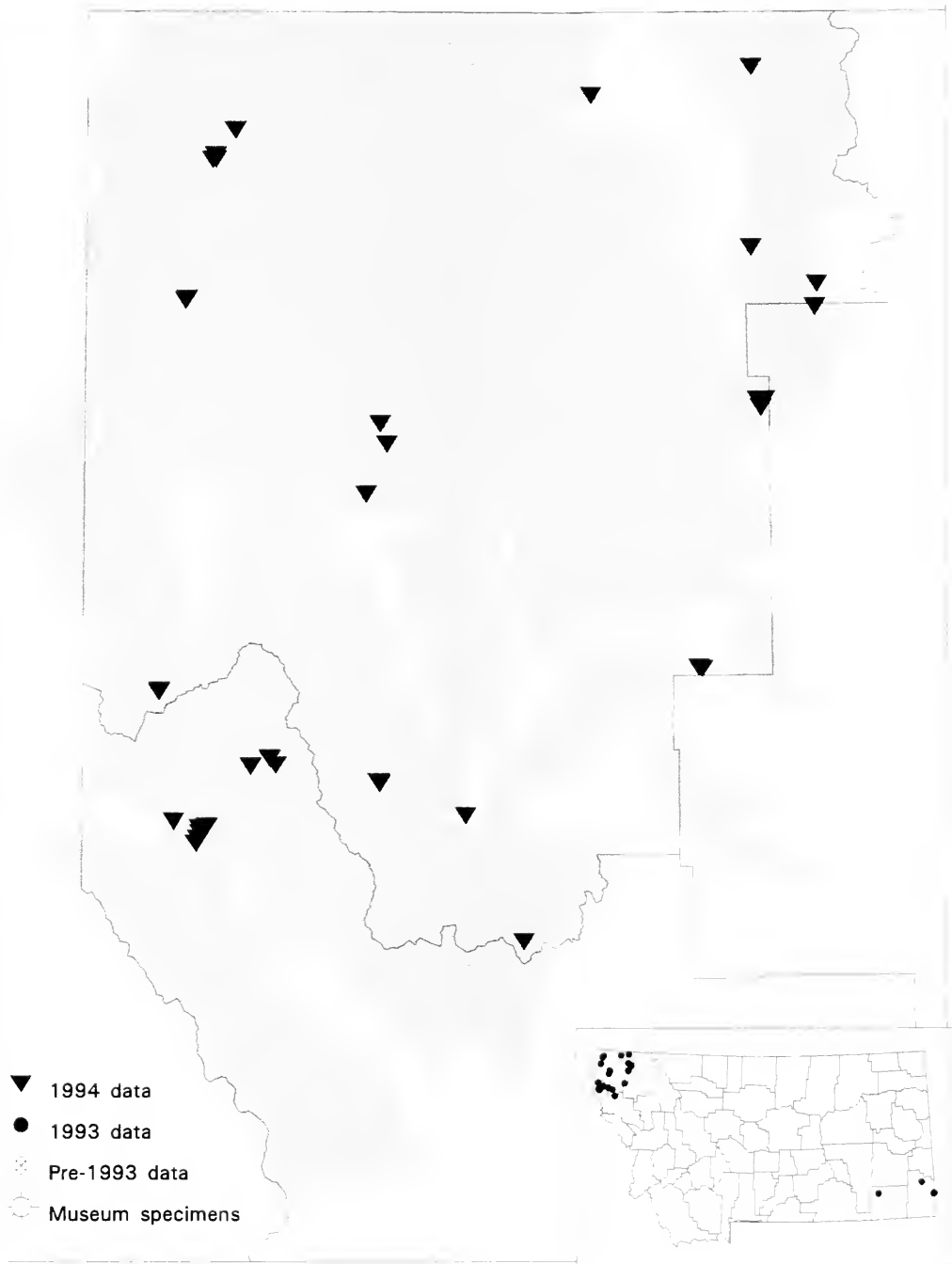
The Fringed Myotis (*Myotis thysanodes*) may also occur on the Kootenai National Forest, but is considered a rare breeder in western Montana (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969). The Spotted Bat (*Euderma maculatum*) and the Pallid Bat (*Antrozous pallidus*) are found about 230 km to the west in the Okanagan Valley of British Columbia (van Zyll de Jong 1985),

and 600 km to the southeast in the Pryor Mountains (Worthington 1991), but lack of suitable arid habitat on the Kootenai National Forest makes their occurrence unlikely here.

Species accounts follow, which summarize distributional and life history information for all (detected and potential) species on the Kootenai National Forest. Distribution maps show results of the 1993 and 1994 surveys.

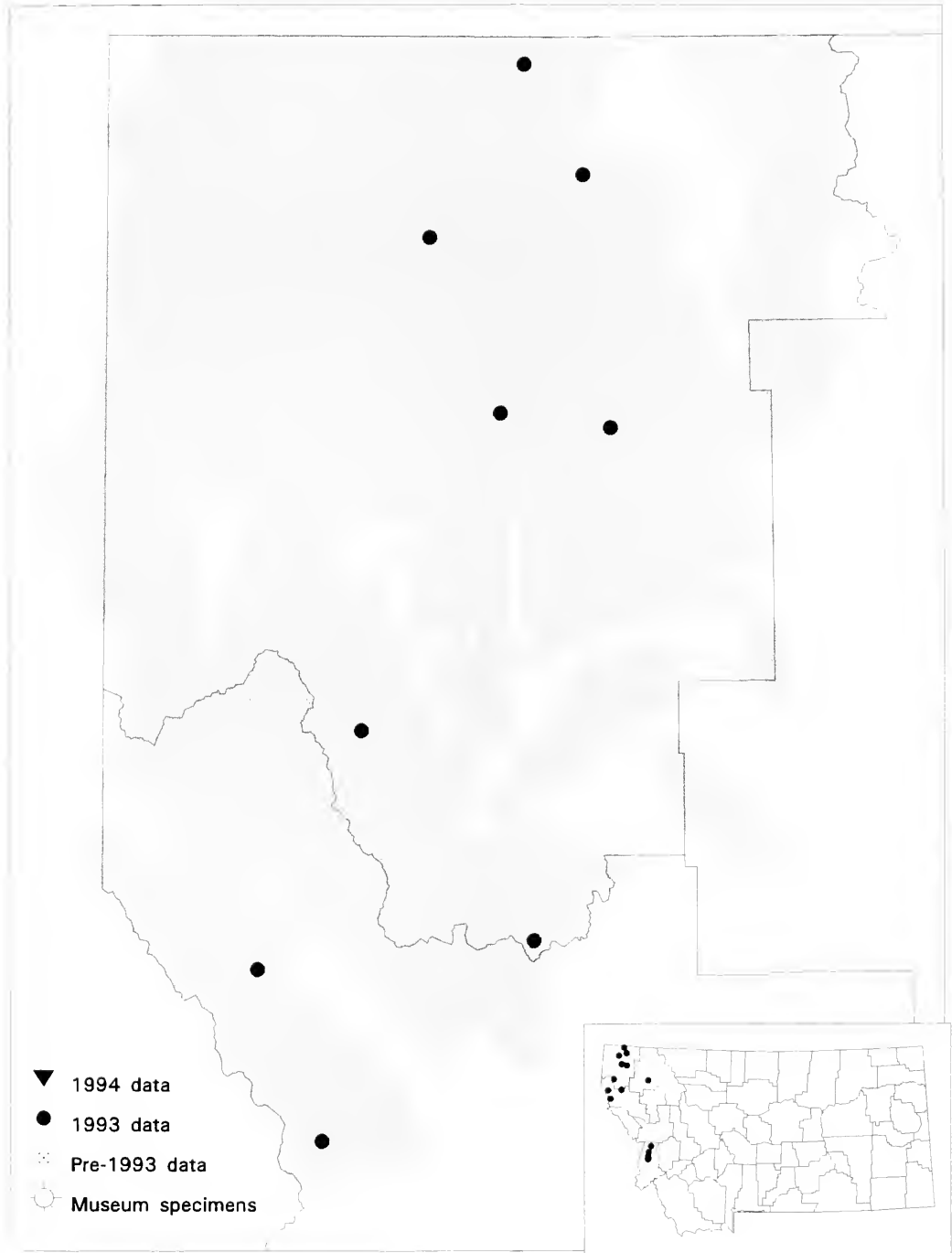
Myotis spp. -- Unidentified myotis

Occurrences on or near the Kootenai National Forest, Montana



Myotis californicus -- California Myotis

Occurrences on or near the Kootenai National Forest, Montana



Species Present on the Kootenai National Forest

California Myotis (*Myotis californicus*)

Description: Fur full and long, but not glossy. Body variably light tan to nearly black. Hind foot small (< 8.5 mm), but ears relatively long (extending beyond the tip of the nose when pressed forward). Naked part of the snout is about as long as the width of the nostrils when viewed from above. Calcar is keeled.

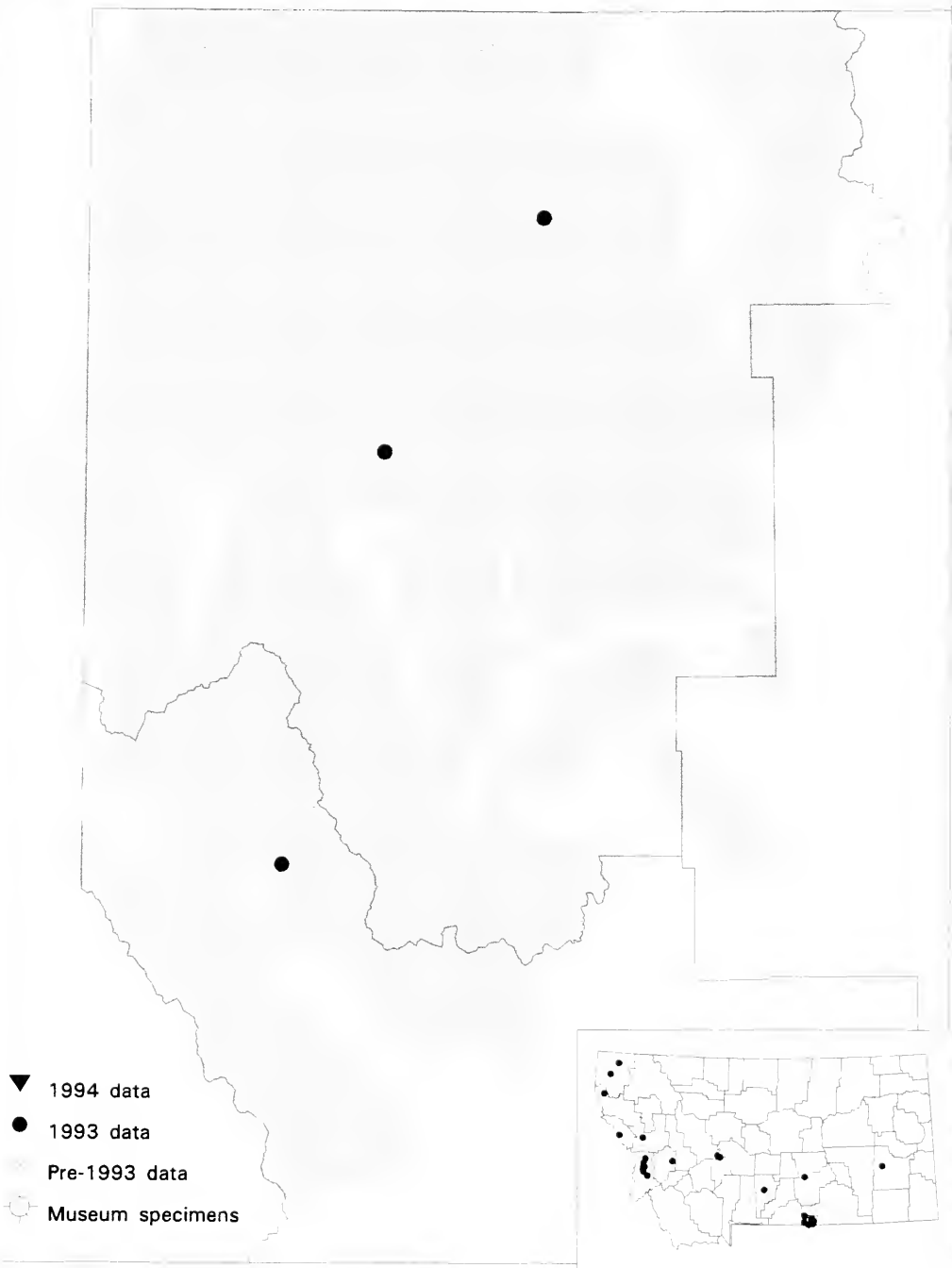
Distribution: Found from southeastern Alaska south to southern Mexico in western North America.

Habitat and Habits: This species is a bat of western lowlands (usually < 1800 m elevation), often found associated with rock-walled canyons, from arid to humid woodlands and forests. Small numbers have been reported hibernating in mines and caves in Oregon, Washington (Perkins *et al.* 1990) and British Columbia (Nagorsen *et al.* 1993). Summer roost sites include buildings, rock crevices, hollow trees, and spaces under loose bark. Females form small maternity colonies, sometimes also in with *M. lucifugus* (Hoffmann and Pattie 1968), with young born in July. Roemer (1994) captured lactating females on 16 July on the Cabinet District and 27 August on the Fisher River District. This species emerges from roosts at sunset to feed until dawn. Flight is slow, erratic, and usually low near vegetation or water.

Status: Hoffmann and Pattie (1968) and Hoffmann *et al.* (1969) indicate that the distribution of this bat in Montana is restricted to valleys west of the Continental Divide; specimens are available from Flathead (Kalispell) and Ravalli Counties. Eighteen of 113 bats captured by Roemer (1994) on the Kootenai National Forest were this species; it has been recorded from the Cabinet, Fisher River, Libby, and Rexford Districts (Appendix 4). While not noted during the 1994 survey, this species may have been present at sites where *Myotis* sp. was detected (most species of *Myotis* are not easily distinguishable with bat detectors). Present in the Idaho panhandle (Groves and Marks 1985), but probably winters outside of the region. The California Myotis is not listed by any federal agency.

Natural Heritage Program rank: G5; not on Montana Species of Special Concern list.

Myotis ciliolabrum -- Western Small-footed Myotis
Occurrences on or near the Kootenai National Forest, Montana



Western Small-footed Myotis (*Myotis ciliolabrum*; formerly *M. leibii ciliolabrum*)

Description: This is the smallest (3-7 g) bat in the area. Dorsal pelage is pale yellowish brown to golden brown, contrasting with the blackish ears (13-15 mm) and membranes. The most notable characteristic other than small size is the strongly-keeled calcar (the spur projecting from the ankle which supports the uropatagium).

Distribution: Ranges over much of western North America from southern Canada to northern Mexico.

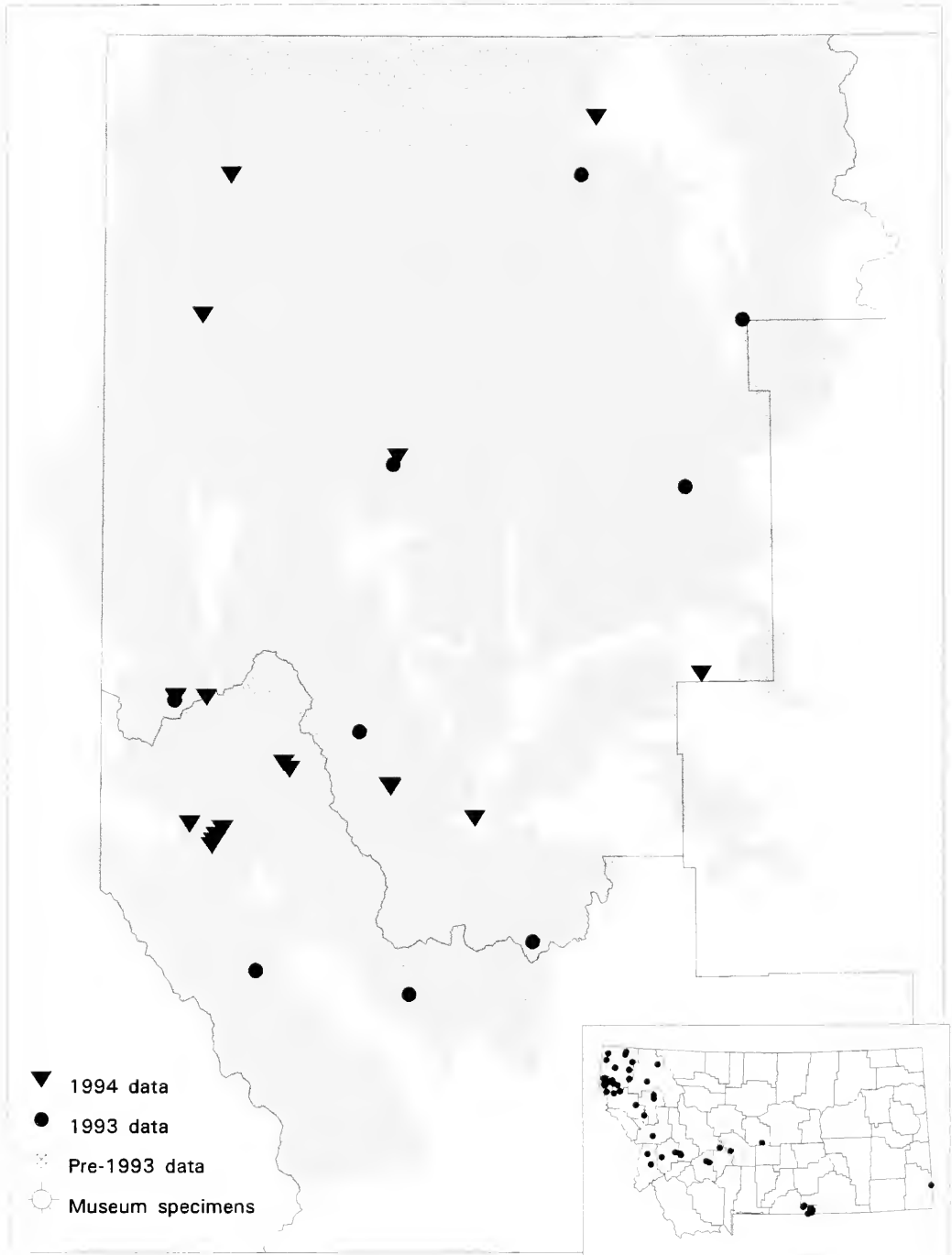
Habitat and Habits: Appears to prefer more arid habitats, where it is associated with cliffs, talus, clay buttes, and steep riverbanks. Roosts in crevices in buildings, trees, rock faces, and clay banks, and may use spaces under and between talus and boulders. Hibernacula include caves and abandoned mines in central Montana (Swenson 1970) and Idaho (Genter 1986). Tends to become active at dusk and forages low along cliffs and rocky slopes rather than over water. Little information is available on reproduction. One of six females collected in Carter County in late June to early July carried an embryo (Jones *et al.* 1973), and a lactating female was collected on 18 July (Lampe *et al.* 1974). Roemer (1994) captured a lactating female on 1 September on the Libby District.

Status: Widespread, but with few records for Montana (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969); appears to be fairly common in Carter and Carbon Counties (Jones *et al.* 1973, Worthington 1991). In western Montana, there are records from Mineral, Missoula, and Ravalli Counties (Hoffmann *et al.* 1969); found at Osoyoos Lake, British Columbia and Lethbridge, Alberta (van Zyll de Jong 1985). Seven of 113 bats captured by Roemer (1994) on the Kootenai National Forest were this species; it has been recorded from the Cabinet, Libby, and Rexford Districts (Appendix 4). While not noted during the 1994 survey, this species may have been present at sites where *Myotis* sp. was detected (most species of *Myotis* are not easily distinguishable with bat detectors). The Western Small-footed Myotis is a U. S. Fish and Wildlife Service candidate (C2) species for federal listing.

Natural Heritage Program rank: G5; S4.

Myotis evotis -- Long-eared Myotis

Occurrences on or near the Kootenai National Forest, Montana



Long-eared Myotis (*Myotis evotis*)

Description: The ears of this bat are heavily pigmented (black and opaque) and are the longest (17-25 mm) of any American myotis; when pressed forward, ears extend >5 mm beyond the nose. Fur is long and glossy above, paler below. Posterior border of the uropatagium lacks a conspicuous fringe of hair. Weighs 6-8 g.

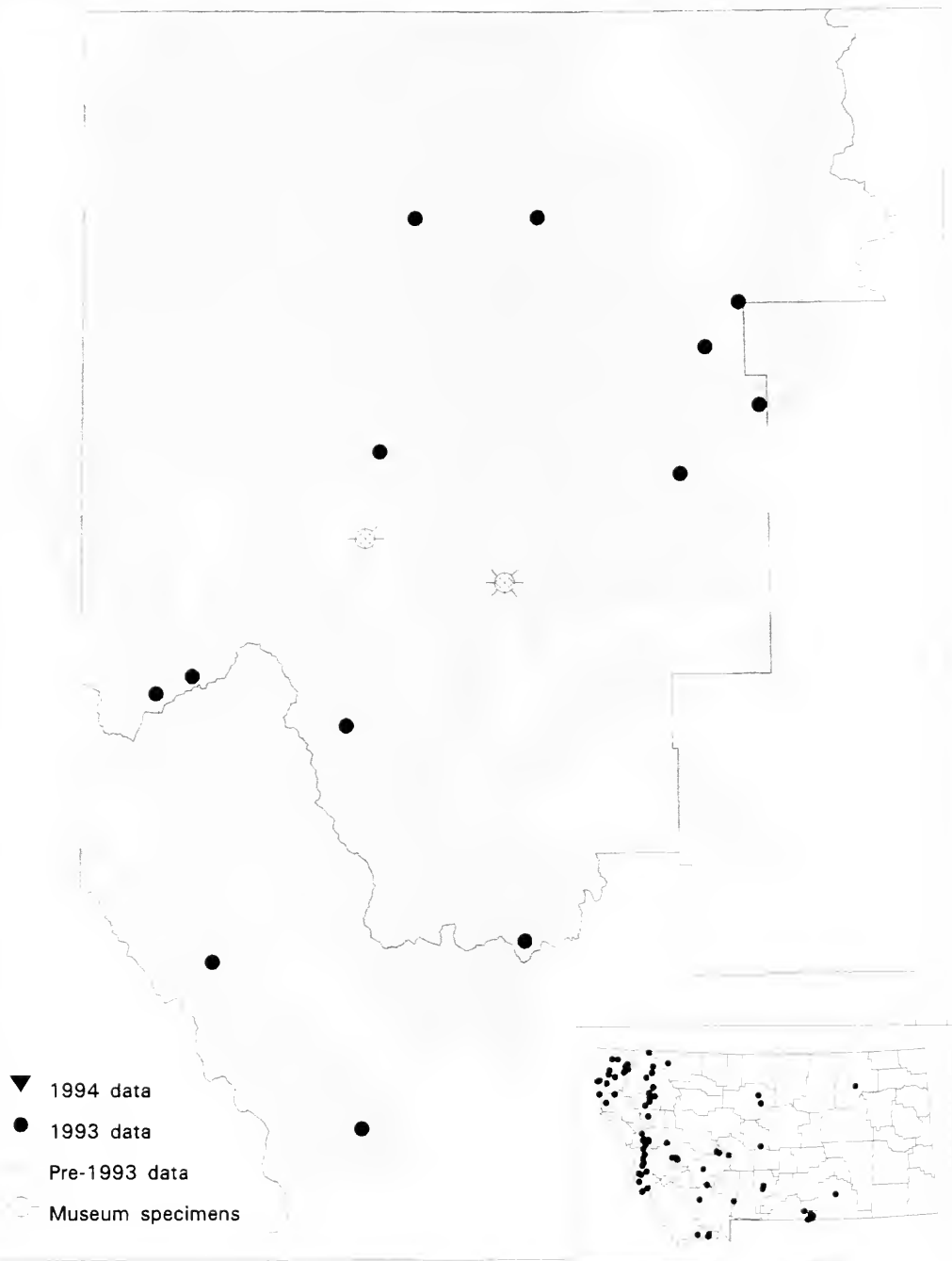
Distribution: Ranges over much of the western North America from southern Canada south to New Mexico, Arizona, and southern California.

Habitat and Habits: This species is especially common around rocky habitat in coniferous forest. Uses sheds, cabins, caves, and abandoned mines for roosting sites; hibernacula are poorly known, but abandoned coal mines have been used in northeastern Montana (Swenson and Shanks 1979); there are no overwinter records from British Columbia (Nagorsen *et al.* 1993). Females apparently form small maternity colonies, though this is poorly documented. Pregnant females have been found in late June and early July in British Columbia (van Zyll de Jong 1985). A colony was found in an abandoned house in Glacier National Park (Lechleitner 1967), and specimens have been obtained in Flathead County around Kalispell (Hoffmann *et al.* 1969). Roemer (1994) found lactating females on the Rexford District on 29 July and on the Libby District on 25 August. During 1994, this species was detected at 16 sites in August and September on the Kootenai National Forest (Appendix 3). This species is often encountered at late dusk hunting among trees and over water.

Status: Considered uncommon but widespread in western Montana (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969). Thirteen of 113 bats captured by Roemer (1994) on the Kootenai National Forest were this species; it has been recorded from all Forest Districts (Appendix 4). In 1994, this species was recorded from the Cabinet, Fisher River, Libby, Rexford, and Three Rivers Districts (Appendix 4). Present in the Idaho panhandle (Groves and Marks 1985). The Long-eared Myotis is a U. S. Fish and Wildlife Service candidate (C2) species for federal listing.

Natural Heritage Program rank: G5; S4.

Myotis lucifugus -- Little Brown Myotis
Occurrences on or near the Kootenai National Forest, Montana



Little Brown Myotis (*Myotis lucifugus*)

Description: Dorsal color is dark brown to buffy brown, often with a metallic coppery sheen; ears (13-15 mm) are about the same color as the dorsum and rounded. The tragus is relatively short and blunt. The uropatagium and wings are naked except along the proximal margins. The calcar is not keeled. Weighs 5-9 g.

Distribution: From central Alaska south and east through most of Canada and the United States to central Mexico.

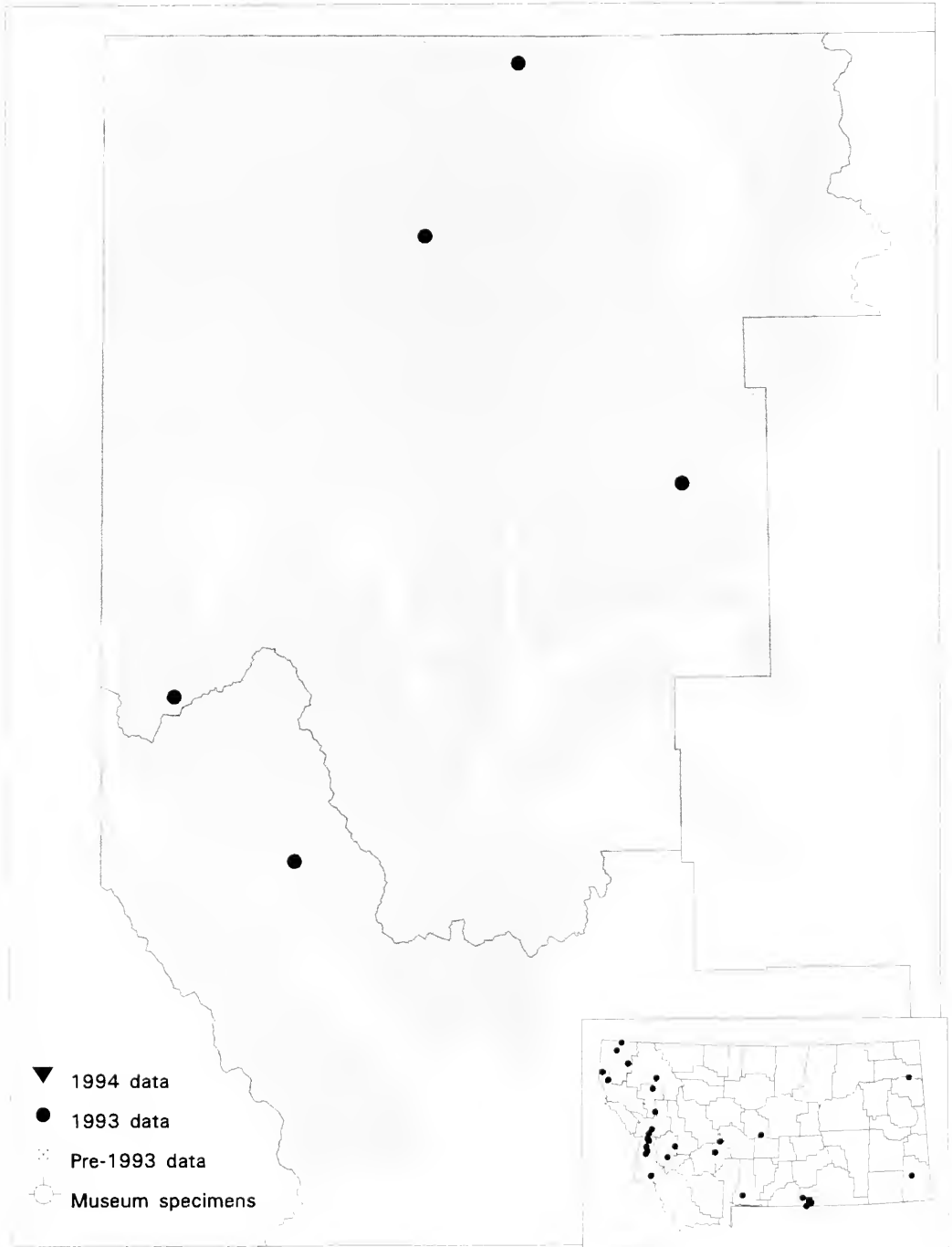
Habitat and Habits: Widely distributed in a variety of habitats, but usually near water. Day roosts include caves, under bark, and in buildings. Hibernacula include caves and mines. Two were found hibernating in December near Sidney in eastern Montana (Swenson and Shanks 1979) but most probably leave the state during the winter; several hibernacula have been found in Alberta (Schowalter *et al.* 1979), but there are only a few winter records of individuals for British Columbia (Nagorsen *et al.* 1993). This species prefers to hunt low over water and among trees. Maternity colonies are now most commonly found in buildings and are formed in May; young are born in June and early July at this latitude.

Status: This species is one of the most common bats in North America, and is considered common throughout Montana (Hoffmann and Pattie 1968) and at lower elevations in Glacier National Park to the east (Lechleitner 1967). Fifty-nine of 113 bats captured by Roemer (1994) were this species; it has been recorded from all Forest Districts (Appendix 4). While not noted during the 1994 survey, this species may have been present at sites where *Myotis* sp. was detected (most species of *Myotis* are not easily distinguishable with bat detectors). Present in the Idaho panhandle (Groves and Marks 1985). The Little Brown Myotis is not listed by any federal agency.

Natural Heritage Program rank: G5; not on Species of Special Concern list in Montana.

Myotis volans -- Long-legged Myotis

Occurrences on or near the Kootenai National Forest, Montana



Long-legged Myotis (*Myotis volans*)

Description: A medium-sized (5-9 g) myotis; fur color varies from reddish brown to nearly black. Ears are relatively short (8-16 mm), and blackish brown with rounded tips, just reaching nostrils when laid forward. Tragus is short with a small, rounded basal lobe. Calcar is keeled. Underwing is densely-furred to a line from elbow to knee.

Distribution: From northern British Columbia south to central Mexico and east to the central Great Plains.

Habitat and Habits: Inhabits forested regions in both conifers and mixed conifer-hardwoods. Roosts in trees, rock crevices, mines, caves, cracks and crevices in stream banks, and in buildings. Caves and old mines are used as hibernacula. Swenson and Shanks (1979) found hibernating males in a mine in northeastern Montana in December; there are no winter records of this species in British Columbia (Nagorsen *et al.* 1993), but hibernacula have been found in Alberta west of Edmonton (Schowalter 1980). It is often found at higher elevations up to treeline in summer (Fenton *et al.* 1983, Hoffmann *et al.* 1969, Pattie and Verbeek 1967). In Carter County, Montana, females with enlarged uteri have been collected in late May, females with embryos in late June, and lactating females in July and early August (Jones *et al.* 1973, Lampe *et al.* 1974). A lactating female was caught on the Three Rivers District on 15 July (Roemer 1994). This species feeds over meadows and stream courses after emerging early in the evening.

Status: Considered widespread but uncommon in Montana (Hoffmann and Pattie 1968); apparently scarce in Glacier National Park (Lechleitner 1967). Nine of 113 bats captured by Roemer (1994) were this species; it has been recorded from the Cabinet, Fisher River, Rexford, and Three Rivers Districts (Appendix 4). While not noted during the 1994 survey, this species may have been present at sites where *Myotis* sp. was detected (most species of *Myotis* are not easily distinguishable with bat detectors). Present in the Idaho panhandle (Groves and Marks 1985). The Long-legged Myotis is a U. S. Fish and Wildlife Service candidate (C2) species for federal listing.

Natural Heritage Program rank: G5; S4.

Yuma Myotis (*Myotis yumanensis*)

Description: Closely resembles *M. lucifugus*, but somewhat smaller with duller, shorter pelage. Basal fur on shoulders is lighter colored, and the ears are paler. Ears do not extend beyond the tip of the nose when pressed forward. Foot relatively large (9-10 mm); the calcar is not keeled.

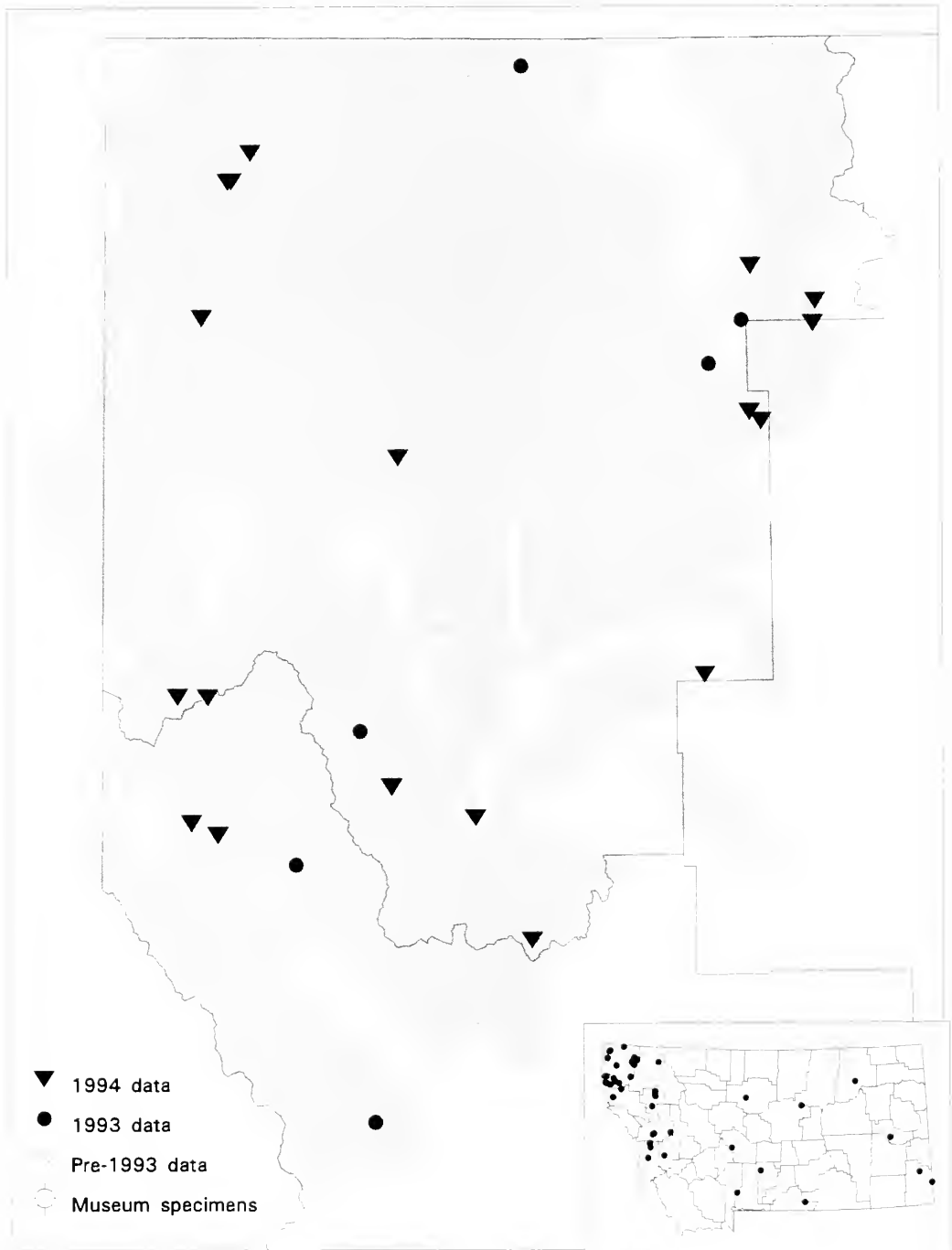
Distribution: In western North America from British Columbia to central Mexico, west of the 100th meridian.

Habitat and Habits: Appears to be closely associated with water, often in relatively open terrain with sparse tree cover. Hibernacula include mines and caves; roosts include buildings, hollow trees and under bark, caves, and mines. Often found in mixed colonies with *M. lucifugus* (Hoffmann and Pattie 1968). Females form maternity colonies, with young born in June in British Columbia (Fenton *et al.* 1980, van Zyll de Jong 1985). Streams are important habitat for this species; it emerges shortly after dusk to forage low over running water.

Status: One of the more common bats in Montana west of the Continental Divide (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969), with specimens from Flathead County (West Glacier) south through the Flathead and Bitterroot Valleys. While not noted during the 1994 survey, this species may have been present at sites where *Myotis* sp. was detected (most species of *Myotis* are not easily distinguishable with bat detectors). Present in the Idaho panhandle (Groves and Marks 1985). Most individuals probably winter outside of the region; there are single winter records from Oregon (Perkins *et al.* 1990) and British Columbia (Nagorsen *et al.* 1993). The Yuma Myotis is a U.S. Fish and Wildlife Service candidate (C2) species for federal listing.

Natural Heritage Program rank: G5; S3 on Montana Species of Special Concern list.

Lasionycteris noctivagans -- Silver-haired Bat
Occurrences on or near the Kootenai National Forest, Montana



Silver-haired Bat (*Lasionycteris noctivagans*)

Description: This bat can be distinguished from all other bats in the Northern Rocky Mountains by its distinctive coloration. The dorsal pelage is long, blackish brown, and "frosted" with silvery white. Membranes are blackish brown, ears are short (12-17 mm), rounded, and naked. The dorsal surface of the uropatagium is furred. Weighs 8-12 g.

Distribution: Occurs throughout much of the United States and southern Canada north to southeastern Alaska and south to northern Mexico.

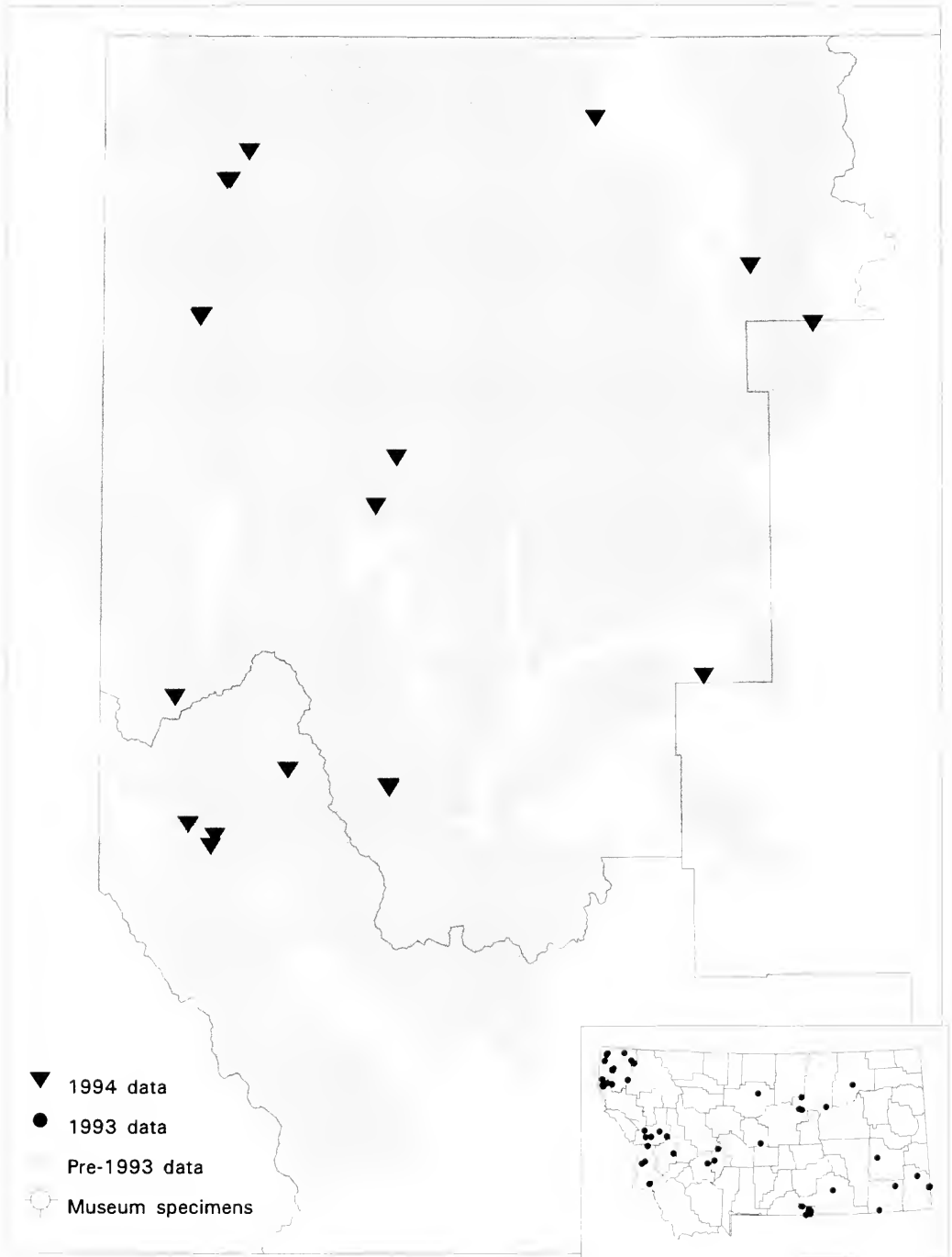
Habitat and Habits: Found in a variety of forested habitats, sometimes in open country associated with stands of trees; preferably near ponds and streams. Few summer roosts have been described, but probable sites are behind bark or in tree cavities. This bat is more common in buildings in autumn during migration. Hibernacula include tree cavities, rock crevices and buildings, and infrequently in mines or caves. Most individuals probably migrate out of the area (Izor 1979), but winter records exist for British Columbia (Nagorsen *et al.* 1993). In the Pacific Northwest, summer roosts are probably most abundant in old growth forests (Perkins and Cross 1988, Thomas 1988). This species is solitary, so it is rarely found in groups with more than 3-4 individuals. Mating occurs in autumn, and the young are usually born in June. Volant young and lactating females were caught in mid-July in Carter County, Montana (Jones *et al.* 1973). This species emerges early in the evening to forage around street lights, among trees, and around standing water in a slow leisurely pattern low over the ground. In 1994, this species was detected on the Kootenai National Forest at one site in July, eight sites in August, and eight sites in September (Appendix 3).

Status: A fairly common summer resident in coniferous forest habitat throughout Montana (Hoffmann and Pattie 1968), locally common in Carter County, Montana (Jones *et al.* 1973), and probably common in Glacier National Park (Lechleitner 1967). Most individuals probably migrate out of the region in autumn. Seven of 113 bats captured by Roemer (1994) were this species; it has been recorded from all Forest Districts (Appendix 4). This species is present in the Idaho panhandle (Groves and Marks 1985). The Silver-haired bat is not listed by any federal agency.

Natural Heritage Program rank: G5; not on Montana Species of Special Concern list.

Eptesicus fuscus -- Big Brown Bat

Occurrences on or near the Kootenai National Forest, Montana



Big Brown Bat (*Eptesicus fuscus*)

Description: This species is easily distinguished from other bats in the Northern Rocky Mountains by its large size (only the Hoary Bat is larger); weight range is 16-30 g. Pelage is brown, with hair extending only slightly onto the wing and tail membranes. The dark-colored ears are of medium size (12-19 mm); the tragus is less than half the length of the ear and is blunt. Calcar is usually keeled. Tip of tail extends about 5 mm beyond tip of uropatagium.

Distribution: Widespread across all of the United States and southern half of Canada south to northern South America.

Habitat and Habits: Found in a variety of wooded and semi-open habitats. Colonial, often forming colonies in tree cavities, rock crevices and buildings. Hibernacula include caves and mines, buildings (attics) and other man-made structures; winter records exist from Alberta (Schowalter and Gunson 1979) and British Columbia (Nagorsen *et al.* 1993). Maternity colonies have been found in attics, barns in northeastern Montana (Swenson and Shanks 1979), and sometimes in tree cavities. Mating occurs in fall and winter. Pregnant females have been collected in Carter County, Montana in late June; lactating females have been collected in early July, and volant young have been collected in mid-July and early August (Jones *et al.* 1973); most young in Alberta are born in late June (Schowalter and Gunson 1979). Emerges at twilight to hunt for an initial period of about five hours, after which activity declines; often forages over meadows, around yard lights, and along tree-lined streets. In 1994, this species was detected on the Kootenai National Forest at one site in July, eight sites in August, and seven sites in September (Appendix 3).

Status: Considered less common in Montana than elsewhere in the United States (Hoffmann and Pattie 1968); uncommon in Glacier National Park (Lechleitner 1967), but the most common bat in Carter County, Montana (Jones *et al.* 1973). Present in the Idaho panhandle (Groves and Marks 1985). This species was detected on all Districts of the Kootenai National Forest in 1994 (Appendix 4). Not listed by any federal agency.

Natural Heritage Program rank: G5; not on Species of Special Concern list in Montana.

Lasiurus cinereus -- Hoary Bat

Occurrences on or near the Kootenai National Forest, Montana



Hoary Bat (*Lasiurus cinereus*)

Description: Can be distinguished from other bats by a combination of its large size (20-35 g) and distinctive coloration. Dorsal pelage varies from yellowish brown to mahogany, frosted with silver (imparting a "hoary" appearance). Hairs on the neck are longer than those on the back, forming a slight "ruff." The wings are furred outward to the level of the elbows, and the dorsal surface of the uropatagium is covered with dense fur. There is a yellowish white patch on each shoulder and a cream-colored spot near the wrist. Ears are short (17-20 mm) and broad, and the calcar is moderately keeled.

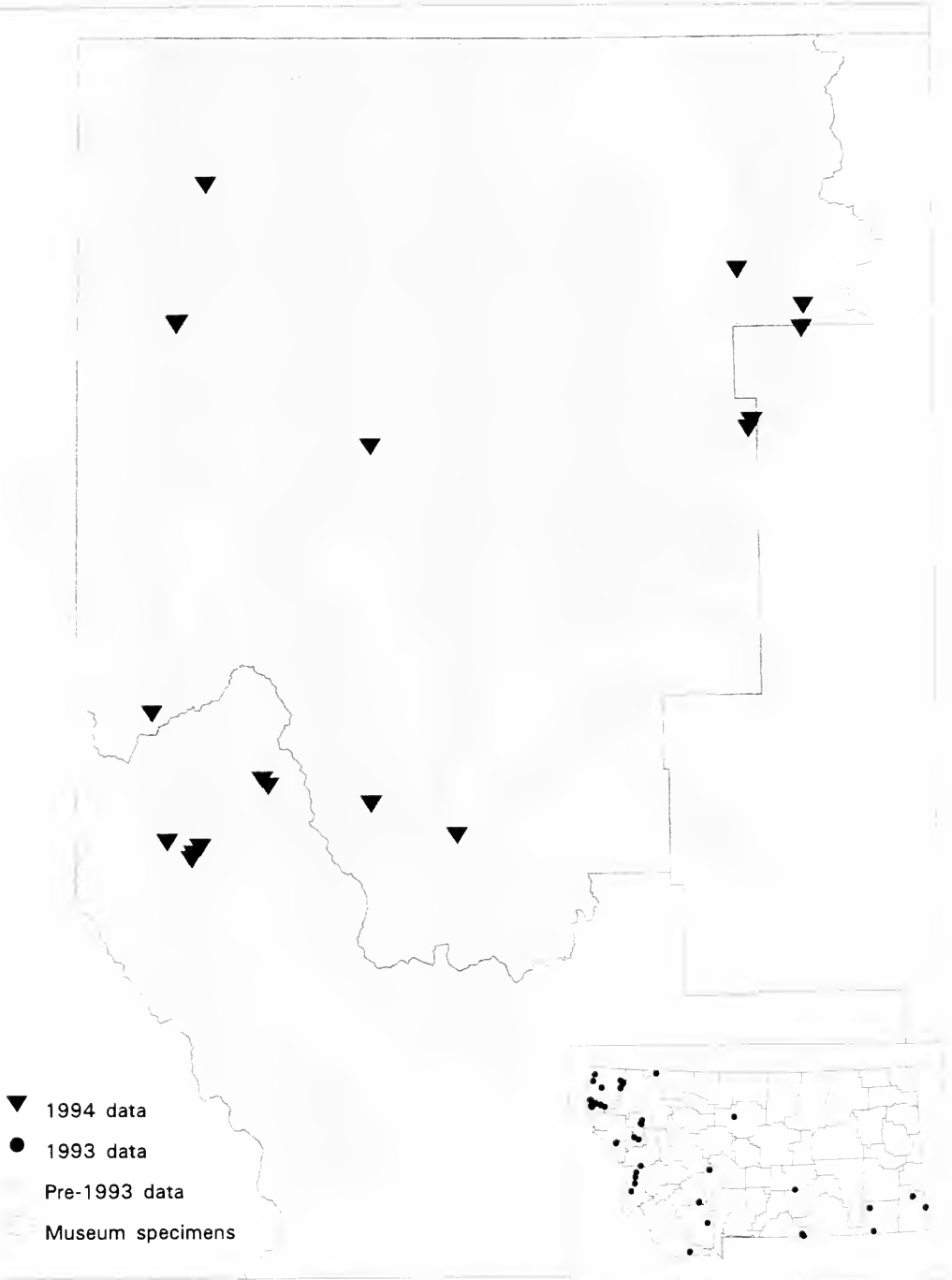
Distribution: Widespread across southern Canada south through the United States to northern South America.

Habitat and Habits: Occurs in many places during migration, but found in wooded habitats during the breeding season. This species has not been found wintering in the region (Nagorsen *et al.* 1993) although there is a winter record from western Washington (Perkins *et al.* 1990); arrives in this region in June (Findley and Jones 1964). Day roosts (about 3-5 m above ground) are mostly in trees, well-covered with vegetation above and open below; apparently both deciduous and coniferous trees are used. Enters caves, mines, and houses only rarely. Solitary or in small family groups during summer, although larger aggregations may form during migration. Mating may take place before migration or on the wintering grounds; females are pregnant by the time they migrate north. Lactating females and volant young have been collected in July in the Long Pines and Ekalaka Hills of Carter County, Montana (Jones *et al.* 1973). This species emerges later in the evening than other species and is a swift flyer; it flies low, occasionally impaling itself on barbed-wire fences. This bat regularly emits a chattering during flight that is audible to the human ear. Usually found at lower elevations; summer roosts may be most abundant in old growth forests (Perkins and Cross 1988, Thomas 1988). In 1994, this species was detected at five sites in August and three in September (Appendix 3).

Status: Hoffmann and Pattie (1968) indicated that there are relatively few records for Montana, and the species is hypothetical for Glacier National Park (Lechleitner 1967). It is, however, a common summer resident in Carter County (Jones *et al.* 1973), and Worthington (1991) captured several in southern Carbon County. Present in the Idaho panhandle (Groves and Marks 1985). In 1994, this species was recorded from the Kootenai National Forest on the Fortine, Rexford, and Three Rivers Districts (Appendix 4). The Hoary Bat is not listed by any federal agency.

Natural Heritage Program rank: G5; not on Species of Special Concern list for Montana.

Plecotus townsendii -- Townsend's Big-eared Bat
Occurrences on or near the Kootenai National Forest, Montana



Townsend's Big-eared Bat (*Plecotus townsendii*)

Description: Easily distinguished from other bats in the region. A medium-sized (8-12 g) bat with very long (30-39 mm) ears and two prominent masses on the lateral surface of the snout between the eyes. Wings and tail membranes are hairless, dorsal pelage is brownish with individual hairs grayish at the base and cinnamon to brownish at the tip.

Distribution: In western North America, from southwestern Canada to southern Mexico east to western Kansas, Oklahoma, and the Northern Great Plains; also in a narrow band in northern Arkansas east to West Virginia.

Habitat and Habits: Usually found associated with desert shrublands, pinyon-juniper woodlands, and dry to wet coniferous forests. A cave dweller for both day roosts and hibernacula; Lewis and Clark Caverns, Jefferson County, is a regular hibernaculum (Hoffmann and Pattie 1968, Hoffmann *et al.* 1969). Also frequently found in abandoned mines in central and eastern Montana (Hoffmann *et al.* 1969, Swenson 1972, Swenson and Shanks 1979). Overwinters regularly in British Columbia (Nagorsen *et al.* 1993). A colony was found in late September in an abandoned farm house in Richland County, Montana (Swenson and Shanks 1979). Females form maternity colonies in warmer parts of caves and mines. Mating occurs in fall and winter. Disperses from large caves in late spring to form maternity colonies in smaller caves and buildings. Emerges well after dark and is a slow and agile flyer. In 1994, this species was detected on the Kootenai National Forest at one site in July, four sites in August, and 12 sites in September (Appendix 3).

Status: Uncommon in western and central Montana (Hoffmann and Pattie 1968). Found throughout northwestern Montana, with specimens from Flathead and Sanders Counties (Hoffmann *et al.* 1969). Present in the Idaho panhandle (Groves and Marks 1985). This species was found on the Kootenai National Forest on the Cabinet, Fortine, Libby, and Three Rivers Districts in 1994 (Appendix 4). Townsend's Big-eared Bat is a U. S. Fish and Wildlife Service candidate (C2) species for federal listing, and has U. S. Forest Service Sensitive status.

Natural Heritage Program rank: G4; S2.

Species Potentially Present on the Kootenai National Forest

Fringed Myotis (*Myotis thysanodes*)

Description: A medium-sized (5-8 g) large-eared myotis. Dorsal pelage varies from medium brown to pale buff, the individual hairs being grayish-black basally. Ears and membranes are blackish brown and often contrast with the pelage color; ears (17-21 mm) extend 3-5 mm beyond nostrils when pressed forward. Calcar lacks a distinct keel. A fringe of conspicuous pale, straw-colored hairs extends posteriorly 1-2 mm beyond the edge of the uropatagium.

Distribution: From southern British Columbia south to southern Mexico and east to western North and South Dakota.

Habitat and Habits: This bat seems to prefer montane and upland forests, but also appears in desert scrub and some non-wooded areas. Commonly roosts in buildings, but also uses caves and abandoned mines. Hibernacula include old mines and caves. Females form maternity colonies of up to several hundred individuals in summer. These bats are often observed at dusk foraging along water courses and over standing water.

Status: Rare in western Montana in summer (Hoffmann and Pattie 1968); specimens exist for Ravalli, Missoula, and Lewis and Clark Counties (Hoffmann *et al.* 1969). The Fringed Myotis is a U. S. Fish and Wildlife Service candidate (C2) species for federal listing. Natural Heritage Program rank: G5; S3.

RECOMMENDATIONS

- 1) Due to limited time in the field during the 1994 survey and the lack of in-hand examination of any bats, the status and distribution of bats on the Kootenai National Forest reported here should not be considered definitive. Although several collections of bats have been made in northwestern Montana over the years, most field efforts in the region have been brief (less than one month) and not comprehensive; the Kootenai National Forest is notable for the absence of data on its bat fauna. Combined efforts of the various surveys are just beginning to reveal a more complete picture of the bat fauna of the region. Additional summer survey work should be done on all Districts, with special effort directed to under-represented Districts (Fisher River and Rexford) and habitats (old growth cedar-hemlock and Douglas fir, and mesic ponderosa pine in the Tobacco Plains area). Use of mist-nets in conjunction with ultra-sound detectors is encouraged.
- 2) Kenelty Cave (see Campbell 1978) in the Fisher River District (T26N R29W S4) was not surveyed in 1994; it should be checked to determine if it is presently used by bats, either as a summer roost or hibernaculum. Inspection should be done by experienced bat biologists in order to minimize disturbance during summer and to avoid awakening the bats and causing mortality during hibernation. If used by bats, restricted visitor access to this site may be warranted to prevent abandonment.
- 3) Any abandoned mines and buildings on Forest Service land should also be checked for hibernating and summer-roosting bats if possible. Underground mines can be checked for summer bat activity by stretching mist-nets across adits at dusk and recording captures. Records should be kept of any hibernating or roosting bats found, including locality, species present, number, and date.
- 4) Life history information and ecology is poorly known for most bat species in northwestern Montana. Any specimens obtained should be preserved. Locality, date, and reproductive status should be documented. This is especially true for the Western Small-footed Myotis and Fringed Myotis.
- 5) If Great Horned Owl or other owl roosts and nest sites are known, pellets could be routinely collected and examined for bat remains. A number of nocturnal raptors prey on bats opportunistically (e.g., see Mattson 1995), and sometimes systematically. American Kestrels will also prey on bats, and their pellets could be examined as well.
- 6) Large trees with natural cavities should not be removed. Besides providing nesting and roosting sites for birds, some bats will use them for the same purposes.

7) Because bats are vagile, some species may go undetected unless routine and long-term monitoring is conducted. Such a program would be unprecedented in Montana and could potentially provide a wealth of information on bat biology currently unavailable for this region.

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APPENDIX 1
FIELD FORMS USED IN BAT INVENTORIES

Beaufort Wind Scale

- 0 - wind speed <1 mph; smoko rises vertically
- 1 - 1-3 mph; wind direction shown by smoke drift
- 2 - 4-7 mph; wind felt on face, leaves rustle
- 3 - 8-12 mph; leaves & small twigs in constant motion, light flag extended
- 4 - 13-18 mph; rises dust & loose paper; small branches are moved
- 5 - 19-24 mph; small trees in leaf sway; crested wavelets on inland waters

Sky Conditions

- 0 - clear or a few clouds
- 1 - partly cloudy (scattered or variable sky)
- 2 - cloudy (broken or overcast)
- 3 - fog or smoke
- 4 - drizzle
- 5 - snow
- 6 - showers

Metric Conversions

1 ft = 0.3048 m

1 m = 3.2808 ft

33 ft = 10.06 m

66 ft = 20.12 m

for use with

topog. clinometer

Your Pacing

5 m = P

10 m = P

11.3 m = P

30 m = P

50 m = P

100 m = P

200 m = P

300 m = P

Cover Type Codes

- 10000. RESIDENTIAL LAND
 - 10100. urban human dwelling ("blocked" on quad maps; non-native veg)
 - 10200. rural human dwelling (structures in otherwise native vegetation)
- 20000. AGRICULTURAL CROP LAND
 - 20100. irrigated cropland, rangeland, pasture
 - 20200. dry cropland
- 30000. RANGELAND
 - 30100. grassland
 - 30101. ungrazed or lightly grazed (no evidence of well-worn cattle trails)
 - 30102. heavily grazed by cattle (patches of bare soil, trails visible)
 - 30200. sagebrush, shrubsteppe
 - 30201. ungrazed or lightly grazed (no evidence of well-worn cattle trails)
 - 30202. heavily grazed by cattle (patches of bare soil, trails visible)
 - 30300. dry shrubland
- 40000. FORESTED LAND
 - 40100. juniper woodland
 - 40101. ungrazed or lightly grazed (no evidence of well-worn cattle trails)
 - 40102. heavily grazed by cattle (patches of bare soil, trails visible)
 - 40200. ponderosa pine (>80%)
 - 40300. douglas-fir (>80%)
 - 40400. western larch (>80%)
 - 40500. mixed-conifer
 - 40501. old-growth (snags, down, self-thinned, some huge trees)
 - 40502. mature (multi-story, trees about 20-40 cm dbh)
 - 40503. young (shrubs thinned, canopy closed, most trees < 20 cm)
 - 40504. overstory removed (multi-story, like mature but more open)
 - 40505. group selection cut; recent
 - 40506. group selection cut; low shrub 2nd-growth stage
 - 40507. group selection cut; tall shrub/seeding 2nd-growth stage
 - 40508. group selection cut; pole-seeding stage
 - 40509. shelterwood cut; recent
 - 40510. shelterwood cut; low shrub 2nd-growth stage
 - 40511. shelterwood cut; tall shrub/seeding 2nd-growth stage
 - 40512. shelterwood cut; pole-seeding stage
 - 40513. seed tree cut; recent
 - 40514. seed tree cut; low shrub 2nd-growth stage
 - 40515. seed tree cut; tall shrub/seeding 2nd-growth stage
 - 40516. seed tree cut; pole-seeding stage
 - 40517. clearcut; recent
 - 40518. clearcut; low shrub 2nd-growth stage
 - 40519. clearcut; tall shrub/seeding 2nd-growth stage
 - 40520. clearcut; pole-seeding stage
 - 40521. post-fire (standing dead); recent (< 5 yr)
 - 40522. post-fire (standing dead); low shrub 2nd-growth stage
 - 40523. post-fire (standing dead); tall shrub/seeding 2nd-growth stage
 - 40524. post-fire (standing dead); pole-seeding stage
 - 40600. lodgepole (>80%)
 - 40700. spruce-fir
 - 40800. whitebark/limber pine
 - 40900. cedar-hemlock
 - 41000. aspen
 - 42000. mixed-conifer-deciduous mosaic (neither element constitutes a "stand")
- 50000. RIPARIAN
 - 50100. marsh, bog
 - 50200. floodplain, wet meadow
 - 50300. willow flats (associated with broad, meandering rivers)
 - 50400. cottonwood bottomland
 - 50401. decant slaps (lush understory, no visible browse line)
 - 50402. grazed by cattle (little understory recruitment, sharp browse line)
 - 50500. streamside riparian (narrow strip of vegetation along perennial stream)
 - 50501. decant slaps (densely vegetated, untrampled stream bank)
 - 50502. grazed by cattle (stream bank well worn and little vegetated)
 - 50600. hardwood draw
- 60000. TUNDRA
 - 60100. shrub tundra
 - 60200. herbaceous tundra
- 70000. BARREN LAND (in-situ/transition mix of rock, conifer, shrubs)

APPENDIX 2

SITES SURVEYED FOR BATS IN 1994

KOOTENAI NATIONAL FOREST, MONTANA

Appendix 2. Sites of ANABAT surveys for bats on the Kootenai National Forest, Montana in 1994.

District	Location	Date
Cabinet	T26N R33W S3NW (2 sites)	19 Sept
	T26N R33W S3SW	19 Sept
	T26N R33W S9NW	14 Aug
	T27N R32W S3SE	18 Sept
	T27N R32W S4NE (3 sites)	18 Sept
	T27N R32W S5SW	18 Sept
	T27N R33W S32NW	14 Aug
	T27N R33W S34SW (2 sites)	19 Sept
Fisher River	T25N R29W S24NE	22 Aug
	T29N R26W S31NW (2 sites)	15 Aug
Fortine	T32N R26W S11NE	07 Sept
	T32N R26W S11SE	07 Sept
	T32N R26W S12SW (2 sites)	07 Sept
	T32N R26W S13NW	07 Sept
	T33N R26W S1NE	06 Sept
	T34N R25W S5NW	30 July
	T34N R25W S7NW	30 July
	T34N R25W S24SW	06 Sept
	T34N R25W S25NE	06 Sept
T37N R25W S29SE (2 sites)	31 July	
Libby	T26N R30W S2NE	16 Sept
	T26N R30W S3SE (2 sites)	16 Sept
	T27N R29W S31NE (2 sites)	16 Sept
	T27N R31W S13NE (3 sites)	11 Aug
	T31N R31W S22NW (2 sites)	08 Sept
	T32N R31W S23SW	08 Sept
	T32N R31W S35NE (2 sites)	08 Sept
Rexford	T36N R28W S12NE	17 Aug

Appendix 2 (cont.). Sites of ANABAT surveys for bats on the Kootenai National Forest, Montana in 1994.

District	Location	Date
Three Rivers	T28N R33W S9NW	21 Aug
	T28N R34W S12NE (3sites)	21 Aug
	T34N R33W S33SE (3 sites)	17 Sept
	T34N R33W S34SW	17 Sept
	T35N R33W S1NW (3 sites)	19, 20 Aug
	T36N R32W S30NE	20 Aug
	T36N R33W S11NE	20 Aug

APPENDIX 3
BAT SPECIES DETECTED DURING 1994
KOOTENAI NATIONAL FOREST, MONTANA

Appendix 3. Locations of bat species detected during the 1994 field survey on the Kootenai National Forest, Montana.

Species	Location	Date	
<i>Myotis</i> sp.	T26N R33W S3NW (Cabinet)	19 Sept	
	T26N R33W S3SW (Cabinet)	19 Sept	
	T26N R33W S9NW (Cabinet)	14 Aug	
	T27N R32W S3SE (Cabinet)	18 Sept	
	T27N R32W S4NE (Cabinet)	18 Sept	
	T27N R32W S5SW (Cabinet)	18 Sept	
	T27N R33W S32NW (Cabinet)	14 Aug	
	T27N R33W S34SW (Cabinet)	19 Sept	
	T25N R29W S24NE (Fisher River)	22 Aug	
	T29N R26W S31NW (Fisher River)	15 Aug	
	T32N R26W S12SW (Fortine)	07 Sept	
	T32N R26W S13NW (Fortine)	07 Sept	
	T33N R26W S1NE (Fortine)	06 Sept	
	T34N R25W S7NW (Fortine)	30 July	
	T34N R25W S25NE (Fortine)	06 Sept	
	T37N R25W S29SE (Fortine)	31 July	
	T27N R29W S31NE (Libby)	16 Sept	
	T27N R31W S13NE (Libby)	11 Aug	
	T31N R31W S22NW (Libby)	08 Sept	
	T31N R31W S23SW (Libby)	08 Sept	
	T32N R31W S35NE (Libby)	08 Sept	
	T36N R28W S12NE (Rexford)	17 Aug	
	T28N R34W S12NE (Three Rivers)	21 Aug	
	T34N R33W S33SE (Three Rivers)	17 Sept	
	T35N R33W S1NW (Three Rivers)	19, 20 Aug	
	T36N R32W S30NE (Three Rivers)	20 Aug	
	<i>M. evotis</i>	T26N R33W S3NW (Cabinet)	19 Sept
		T26N R33W S3SW (Cabinet)	19 Sept
T26N R33W S9NW (Cabinet)		14 Aug	
T27N R32W S3SE (Cabinet)		18 Sept	
T27N R32W S4NE (Cabinet)		18 Sept	

Appendix 3 (cont.). Locations of bat species detected during the 1994 field survey on the Kootenai National Forest, Montana.

Species	Location	Date
<i>M. evotis</i> (cont.)	T27N R33W S32NW (Cabinet)	14 Aug
	T27N R33W S34SW (Cabinet)	19 Sept
	T29N R26W S31NW (Fisher River)	15 Aug
	T27N R29W S31NE (Libby)	16 Sept
	T27N R31W S13NE (Libby)	11 Aug
	T32N R31W S35NE (Libby)	08 Sept
	T36N R28W S12NE (Rexford)	17 Aug
	T28N R33W S9NW (Three Rivers)	21 Aug
	T28N R34W S12NE (Three Rivers)	21 Aug
	T34N R33W S33SE (Three Rivers)	17 Sept
	T35N R33W S1NW (Three Rivers)	20 Aug
<i>Lasionycteris noctivagans</i>	T26N R33W S3NW (Cabinet)	19 Sept
	T27N R33W S32NW (Cabinet)	14 Aug
	T25N R29W S24NE (Fisher River)	22 Aug
	T29N R26W S31NW (Fisher River)	15 Aug
	T32N R26W S11SE (Fortine)	07 Sept
	T32N R26W S13NW (Fortine)	07 Sept
	T33N R26W S1NE (Fortine)	06 Sept
	T34N R25W S7NW (Fortine)	30 July
	T34N R25W S25 NE (Fortine)	06 Sept
	T27N R29W S31NE (Libby)	16 Sept
	T27N R31W S13NE (Libby)	11 Aug
	T32N R31W S35NE (Libby)	08 Sept
	T28N R33W S9NW (Three Rivers)	21 Aug
	T28N R34W S12NE (Three Rivers)	21 Aug
	T34N R33W S33SE (Three Rivers)	17 Sept
T35N R33W S1NW (Three Rivers)	19, 20 Aug	
T36N R32W S30NE (Three Rivers)	20 Aug	
<i>Eptesicus fuscus</i>	T26N R33W S3NW (Cabinet)	19 Sept

Appendix 3 (cont.). Locations of bat species detected during the 1994 field survey on the Kootenai National Forest, Montana.

Species	Location	Date
<i>Eptesicus fuscus</i> (cont.)	T26N R33W S9NW (Cabinet)	14 Aug
	T27N R32W S3SE (Cabinet)	18 Sept
	T27N R32W S32NW (Cabinet)	14 Aug
	T29N R26W S31NW (Fisher River)	15 Aug
	T33N R26W S1NE (Fortine)	06 Sept
	T34N R25W S7NW (Fortine)	30 July
	T27N R29W S31NE (Libby)	16 Sept
	T27N R31W S13NE (Libby)	11 Aug
	T31N R31W S22NW (Libby)	08 Sept
	T32N R31W S35NE (Libby)	08 Sept
	T36N R28W S12NE (Rexford)	17 Aug
	T28N R34W S12NE (Three Rivers)	21 Aug
	T34N R33W S33SE (Three Rivers)	17 Sept
	T35N R33W S1NW (Three Rivers)	19, 20 Aug
T36N R32W S30NE (Three Rivers)	20 Aug	
<i>Lasiurus cinereus</i>	T32N R26W S12SW (Fortine)	07 Sept
	T32N R26W S13NW (Fortine)	07 Sept
	T33N R26W S1NE (Fortine)	06 Sept
	T36N R28W S12NE (Rexford)	17 Aug
	T28N R33W S9NW (Three Rivers)	21 Aug
	T28N R34W S12NE (Three Rivers)	21 Aug
	T35N R33W S1NW (Three Rivers)	19, 20 Aug
	T36N R32W S30NE (Three Rivers)	20 Aug
<i>Plecotus townsendii</i>	T26N R33W S3NW (Cabinet)	19 Sept
	T26N R33W S3SW (Cabinet)	19 Sept
	T27N R32W S3SE (Cabinet)	18 Sept
	T27N R32W S4NE (Cabinet)	18 Sept

Appendix 3 (cont.). Locations of bat species detected during the 1994 field survey on the Kootenai National Forest, Montana.

Species	Location	Date
<i>Plecotus townsendii</i> (cont.)	T27N R33W S32NW (Cabinet)	14 Aug
	T27N R33W S34SW (Cabinet)	19 Sept
	T32N R26W S12SW (Fortine)	07 Sept
	T32N R26W S13NW (Fortine)	07 Sept
	T33N R26W S1NE (Fortine)	06 Sept
	T34N R25W S7NW (Fortine)	30 July
	T34N R25W S25NE (Fortine)	06 Sept
	T27N R29W S31NE (Libby)	16 Sept
	T27N R31W S13NE (Libby)	11 Aug
	T32N R31W S23SW (Libby)	08 Sept
	T28N R34W S12NE (Three Rivers)	21 Aug
	T34N R33W S33SE (Three Rivers)	17 Sept
	T35N R33W S1NW (Three Rivers)	19 Aug

APPENDIX 4

KNOWN DISTRIBUTION OF BAT SPECIES

ON THE KOOTENAI NATIONAL FOREST, MONTANA

Appendix 4. Bat species presence on Districts of the Kootenai National Forest, Montana.

	Cabinet	Fisher R.	Fortine	Libby	Rexford	Three R.
<i>Myotis</i> sp.	2 ^a	2	2	2	2	2
<i>M. californicus</i>	1	1		1	1	
<i>M. ciliolabrum</i>	1			1	1	
<i>M. evotis</i>	1,2	1,2	1	1,2	1,2	1,2
<i>M. lucifugus</i>	1	1	1	1	1	1
<i>M. volans</i>	1	1			1	1
<i>Lasionycteris noctivagans</i>	1,2	2	1,2	1,2	1	2
<i>Eptesicus fuscus</i>	2	2	2	2	2	2
<i>Lasiurus cinereus</i>			2		2	2
<i>Plecotus townsendii</i>	2		2	2		2

^aSources: Roemer 1994 (1); 1994 field survey (2).

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 Montana Animal Atlas (Mammal)
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County Precision Date Breed Data Type

MYOTIS SPP.

Lincoln < .5 mile. 6/30/1994 No Taped Call
 Old Historic Ant Flat Ranger Station (FS Rd. 36)

Lincoln < .5 mile. 7/31/1994 No Taped Call
 Big Therriault Lake (north end near campground)

Lincoln < .5 mile. 9/ 6/1994 No Taped Call
 Blue Lake. ca. 1 mile south of Stryker

Lincoln < .5 mile. 9/16/1994 No Taped Call
 Fisher Creek Site #2

Lincoln < .5 mile. 8/11/1994 No Taped Call
 Howard Lake (NW shoreline by campground)

Lincoln < .5 mile. 8/11/1994 No Taped Call
 Howard Lake outlet stream near campground

Lincoln < .5 mile. 8/15/1994 No Taped Call
 S end of Island Lake. Plum Cr. Property

Lincoln < .5 mile. 8/15/1994 No Taped Call
 Marsh on SW corner of Island Lake (Plum Cr. prop.)

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Libby Site #1

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Creek-marsh draining Howard Lake

Lincoln < .5 mile. 9/ 6/1994 No Taped Call
 North of Stillwater River Site #2

Lincoln < .5 mile. 8/20/1994 No Taped Call
 7 mi. up Pete Cr. Rd. @ confluence of FS Rd 6134

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County Precision Date Breed Data Type

MYOTIS SPP.

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Pipe Creek Site #2

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Pipe Creek Site #3

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 F.S. Rd. #315 Site #1

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 F.S. Rd. #315 Site #2

Lincoln < .5 mile. 8/17/1994 No Taped Call
 Along Lake Koocanusa-Tobacco River

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Parking lot & down Ross Creek Cedars Road

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Ross Creek Cedars below picnic area over Ross Cr.

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 Jim's "Bog-Lemming Bog" off Sunday Cr.

Lincoln < .5 mile. 8/22/1994 No Taped Call
 Sylvan Lake Campgrounds

Lincoln < .5 mile. 8/19/1994 No Taped Call
 Whitetail Campground Site #2

Lincoln < .5 mile. 8/20/1994 No Taped Call
 Whitetail Campground Site #3

Lincoln < .5 mile. 8/20/1994 No Taped Call
 Draw above Whitetail Campground N. of HWY; Site #1

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County	Precision	Date	Breed	Data Type
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MYOTIS SPP.

Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #1
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #2
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #3
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #1
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #3
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #4
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #5
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir (HWY 200)
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir @ intersection of Bull R.
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #1
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #2
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #4

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County Precision Date Breed Data Type

MYOTIS SPP.

Sanders < .5 mile. 9/18/1994 No Taped Call
East Fork Bull River Site #5

LITTLE BROWN MYOTIS

Lincoln < .5 mile. / /1993 No Observation
Ross Creek Cedars

Lincoln .5 to 5 mil / /1993 No Observation
Bull Lake

Lincoln .5 to 5 mil / /1993 No Observation
Bear Creek

Lincoln < .5 mile. / /1993 No Observation
Timberlane Campground

Lincoln .5 to 5 mil / /1993 No Observation
Upper Fortine Creek

Lincoln .5 to 5 mil / /1993 No Observation
Lower Fortine Creek

Lincoln .5 to 5 mil / /1993 No Observation
Sunday Creek

Lincoln < .5 mile. / /1993 No Observation
Sylvan Lake Campground

Lincoln .5 to 5 mil / /1993 No Observation
Weigle Creek

Lincoln .5 to 5 mil / /1993 No Observation
Big Creek

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LITTLE BROWN MYOTIS (continued)

Lincoln .5 to 5 mil / /1993 No Observation
Sutton Creek

Lincoln .5 to 5 mil 6/12/1949 No Museum Specimen
3 mi. above mouth of Fisher River

Lincoln .5 to 5 mil 7/ 1/1967 No Museum Specimen
Pumphouse near Libby

Sanders < .5 mile. / /1993 No Observation
Devils Gap

Sanders 5 to 10 mil / /1993 No Observation
Lower Beaver Creek

LONG-EARED MYOTIS

Lincoln < .5 mile. 9/16/1994 No Taped Call
Fisher Creek Site #2

Lincoln < .5 mile. 8/11/1994 No Taped Call
Howard Lake outlet stream near campground

Lincoln < .5 mile. 8/15/1994 No Taped Call
Marsh on SW corner of Island Lake (Plum Cr. prop.)

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
Creek-marsh draining Howard Lake

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
Pipe Creek Site #1

Lincoln < .5 mile. 8/17/1994 No Taped Call
Along Lake Koocanusa-Tobacco River

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County Precision Date Breed Data Type

LONG-EARED MYOTIS (continued)

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Parking lot & down Ross Creek Cedars Road

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Ross Creek Cedars below picnic area over Ross Cr.

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Bull River Valley @ Ross Cr. turnoff & HWY 56

Lincoln < .5 mile. 8/20/1994 No Taped Call
 Draw above Whitetail Campground N. of HWY; Site #1

Lincoln < .5 mile. 9/17/1994 No Taped Call
 Yaak River Site #3

Lincoln < .5 mile. / /1993 No Observation
 Ross Creek Cedars

Lincoln .5 to 5 mil / /1993 No Observation
 Bear Creek

Lincoln < .5 mile. / /1993 No Observation
 Timberlane Campground

Lincoln .5 to 5 mil / /1993 No Observation
 Lower Fortine Creek

Lincoln < .5 mile. / /1993 No Observation
 Sylvan Lake Campground

Lincoln .5 to 5 mil / /1993 No Observation
 Weigle Creek

Lincoln < .5 mile. / /1993 No Observation
 Camp 32

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LONG-EARED MYOTIS (continued)

Sanders < .5 mile. 9/19/1994 No Taped Call
 Bull River Site #1

Sanders < .5 mile. 9/19/1994 No Taped Call
 Bull River Site #3

Sanders < .5 mile. 9/19/1994 No Taped Call
 Bull River Site #5

Sanders < .5 mile. 8/14/1994 No Taped Call
 Cabinet Gorge Reservoir (HWY 200)

Sanders < .5 mile. 8/14/1994 No Taped Call
 Cabinet Gorge Reservoir @ intersection of Bull R.

Sanders < .5 mile. 9/18/1994 No Taped Call
 East Fork Bull River Site #1

Sanders < .5 mile. 9/18/1994 No Taped Call
 East Fork Bull River Site #5

Sanders 5 to 10 mil / /1993 No Observation
 Marten Creek

Sanders 5 to 10 mil / /1993 No Observation
 Vermillion River

LONG-LEGGED MYOTIS

Lincoln < .5 mile. / /1993 No Observation
 Ross Creek Cedars

Lincoln .5 to 5 mil / /1993 No Observation
 Weigle Creek

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County	Precision	Date	Breed	Data Type
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LONG-LEGGED MYOTIS (continued)

Lincoln Big Creek	.5 to 5 mil	/ /1993	No	Observation
Lincoln Young Creek	.5 to 5 mil	/ /1993	No	Observation
Sanders Rock Creek	5 to 10 mil	/ /1993	No	Observation

CALIFORNIA MYOTIS

Lincoln Bear Creek	.5 to 5 mil	/ /1993	No	Observation
Lincoln Five Mile Creek	.5 to 5 mil	/ /1993	No	Observation
Lincoln Sylvan Lake Campground	< .5 mile.	/ /1993	No	Observation
Lincoln Bristow Creek	< .5 mile.	/ /1993	No	Observation
Lincoln Big Creek	.5 to 5 mil	/ /1993	No	Observation
Lincoln Camp 32	< .5 mile.	/ /1993	No	Observation
Lincoln Young Creek	.5 to 5 mil	/ /1993	No	Observation
Sanders Marten Creek	5 to 10 mil	/ /1993	No	Observation

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County	Precision	Date	Breed	Data Type
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CALIFORNIA MYOTIS (continued)

Sanders	5 to 10 mil	/ /1993	No	Observation
Upper Beaver Creek				

WESTERN SMALL-FOOTED MYOTIS

Lincoln	< .5 mile.	/ /1993	No	Observation
Timberlane Campground				

Lincoln	.5 to 5 mil	/ /1993	No	Observation
Sutton Creek				

Sanders	5 to 10 mil	/ /1993	No	Observation
Rock Creek				

SILVER-HAIRED BAT

Lincoln	< .5 mile.	6/30/1994	No	Taped Call
Old Historic Ant Flat Ranger Station (FS Rd. 36)				

Lincoln	< .5 mile.	9/ 6/1994	No	Taped Call
Blue Lake, ca. 1 mile south of Stryker				

Lincoln	< .5 mile.	9/16/1994	No	Taped Call
Fisher Creek Site #2				

Lincoln	< .5 mile.	9/16/1994	No	Taped Call
Fisher Creek Site #2				

Lincoln	< .5 mile.	8/11/1994	No	Taped Call
Howard Lake (NW shoreline by campground)				

Lincoln	< .5 mile.	8/11/1994	No	Taped Call
Howard Lake outlet stream near campground				

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County	Precision	Date	Breed	Data Type
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SILVER-HAIRED BAT (continued)

Lincoln < .5 mile. 8/15/1994 No Taped Call
 S end of Island Lake. Plum Cr. Property

Lincoln < .5 mile. 9/ 6/1994 No Taped Call
 North of Stillwater River Site #2

Lincoln < .5 mile. 8/20/1994 No Taped Call
 7 mi. up Pete Cr. Rd. @ confluence of FS Rd 6134

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Pipe Creek Site #2

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 F.S. Rd. #315 Site #4 (just below milepost 16)

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Ross Creek Cedars below picnic area over Ross Cr.

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Bull River Valley @ Ross Cr. turnoff & HWY 56

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 Jim's "Bog-Lemming Bog" off Sunday Cr.

Lincoln < .5 mile. 8/22/1994 No Taped Call
 Sylvan Lake Campgrounds

Lincoln < .5 mile. 8/19/1994 No Taped Call
 Whitetail Campground Site #2

Lincoln < .5 mile. 8/20/1994 No Taped Call
 Whitetail Campground Site #3

Lincoln < .5 mile. 9/17/1994 No Taped Call
 Yaak River Site #1

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County	Precision	Date	Breed	Data Type
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SILVER-HAIRED BAT (continued)

Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #2
Lincoln	.5 to 5 mil	/ /1993	No	Observation Bear Creek
Lincoln	.5 to 5 mil	/ /1993	No	Observation Upper Fortine Creek
Lincoln	.5 to 5 mil	/ /1993	No	Observation Lower Fortine Creek
Lincoln	.5 to 5 mil	/ /1993	No	Observation Young Creek
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #1
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir (HWY 200)
Sanders	5 to 10 mil	/ /1993	No	Observation Rock Creek
Sanders	5 to 10 mil	/ /1993	No	Observation Lower Beaver Creek

BIG BROWN BAT

Lincoln	< .5 mile.	6/30/1994	No	Taped Call Old Historic Ant Flat Ranger Station (FS Rd. 36)
Lincoln	< .5 mile.	9/ 6/1994	No	Taped Call Blue Lake, ca. 1 mile south of Stryker

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County	Precision	Date	Breed	Data Type
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BIG BROWN BAT (continued)

Lincoln	< .5 mile.	8/11/1994	No	Taped Call Howard Lake (NW shoreline by campground)
Lincoln	< .5 mile.	8/15/1994	No	Taped Call S end of Island Lake. Plum Cr. Property
Lincoln	< .5 mile.	9/ 8/1994	No	Taped Call Libby Site #1
Lincoln	< .5 mile.	9/ 8/1994	No	Taped Call Creek-marsh draining Howard Lake
Lincoln	< .5 mile.	8/20/1994	No	Taped Call 7 mi. up Pete Cr. Rd. @ confluence of FS Rd 6134
Lincoln	< .5 mile.	9/ 8/1994	No	Taped Call Pipe Creek Site #2
Lincoln	< .5 mile.	8/17/1994	No	Taped Call Along Lake Koocanusa-Tobacco River
Lincoln	< .5 mile.	8/21/1994	No	Taped Call Ross Creek Cedars below picnic area over Ross Cr.
Lincoln	< .5 mile.	8/19/1994	No	Taped Call Whitetail Campground Site #2
Lincoln	< .5 mile.	8/20/1994	No	Taped Call Whitetail Campground Site #3
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #2
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #3

Natural Heritage Program 12/14/1995
 Montana Animal Atlas (Mammal)
 Species Report

County	Precision	Date	Breed	Data Type
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BIG BROWN BAT (continued)

Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #1
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir (HWY 200)
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir @ intersection of Bull R.
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #1

HOARY BAT

Lincoln	< .5 mile.	9/ 6/1994	No	Taped Call Blue Lake, ca. 1 mile south of Stryker
Lincoln	< .5 mile.	8/20/1994	No	Taped Call 7 mi. up Pete Cr. Rd. @ confluence of FS Rd 6134
Lincoln	< .5 mile.	9/ 7/1994	No	Taped Call F.S. Rd. #315 Site #2
Lincoln	< .5 mile.	8/17/1994	No	Taped Call Along Lake Koocanusa-Tobacco River
Lincoln	< .5 mile.	8/21/1994	No	Taped Call Ross Creek Cedars below picnic area over Ross Cr.
Lincoln	< .5 mile.	8/21/1994	No	Taped Call Bull River Valley @ Ross Cr. turnoff & HWY 56
Lincoln	< .5 mile.	9/ 7/1994	No	Taped Call Jim's "Bog-Lemming Bog" off Sunday Cr.

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County	Precision	Date	Breed	Data Type
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HOARY BAT (continued)

Lincoln < .5 mile. 8/19/1994 No Taped Call
 Whitetail Campground Site #2

Lincoln < .5 mile. 8/20/1994 No Taped Call
 Whitetail Campground Site #3

TOWNSEND'S BIG-EARED BAT

Lincoln < .5 mile. 6/30/1994 No Taped Call
 Old Historic Ant Flat Ranger Station (FS Rd. 36)

Lincoln < .5 mile. 9/ 6/1994 No Taped Call
 Blue Lake, ca. 1 mile south of Stryker

Lincoln < .5 mile. 9/16/1994 No Taped Call
 Fisher Creek Site #2

Lincoln < .5 mile. 8/11/1994 No Taped Call
 Howard Lake (NW shoreline by campground)

Lincoln < .5 mile. 9/ 6/1994 No Taped Call
 North of Stillwater River Site #2

Lincoln < .5 mile. 9/ 8/1994 No Taped Call
 Pipe Creek Site #3

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 F.S. Rd. #315 Site #2

Lincoln < .5 mile. 8/21/1994 No Taped Call
 Parking lot & down Ross Creek Cedars Road

Lincoln < .5 mile. 9/ 7/1994 No Taped Call
 Jim's "Bog-Lemming Bog" off Sunday Cr.

Natural Heritage Program 12/14/1995
 Montana Animal Atlas (Mammal)
 Species Report

County	Precision	Date	Breed	Data Type
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TOWNSEND'S BIG-EARED BAT (continued)

Lincoln	< .5 mile.	8/19/1994	No	Taped Call Whitetail Campground Site #2
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #1
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #2
Lincoln	< .5 mile.	9/17/1994	No	Taped Call Yaak River Site #3
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #1
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #3
Sanders	< .5 mile.	9/19/1994	No	Taped Call Bull River Site #5
Sanders	< .5 mile.	8/14/1994	No	Taped Call Cabinet Gorge Reservoir (HWY 200)
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #1
Sanders	< .5 mile.	9/18/1994	No	Taped Call East Fork Bull River Site #5

